

**A New Species of *Bembix* from Lower California
(Hymenoptera: Sphecidae)**

TERRY L. GRISWOLD

USDA Bee Biology and Systematics Laboratory, Utah State University, Logan,
Utah 84322.

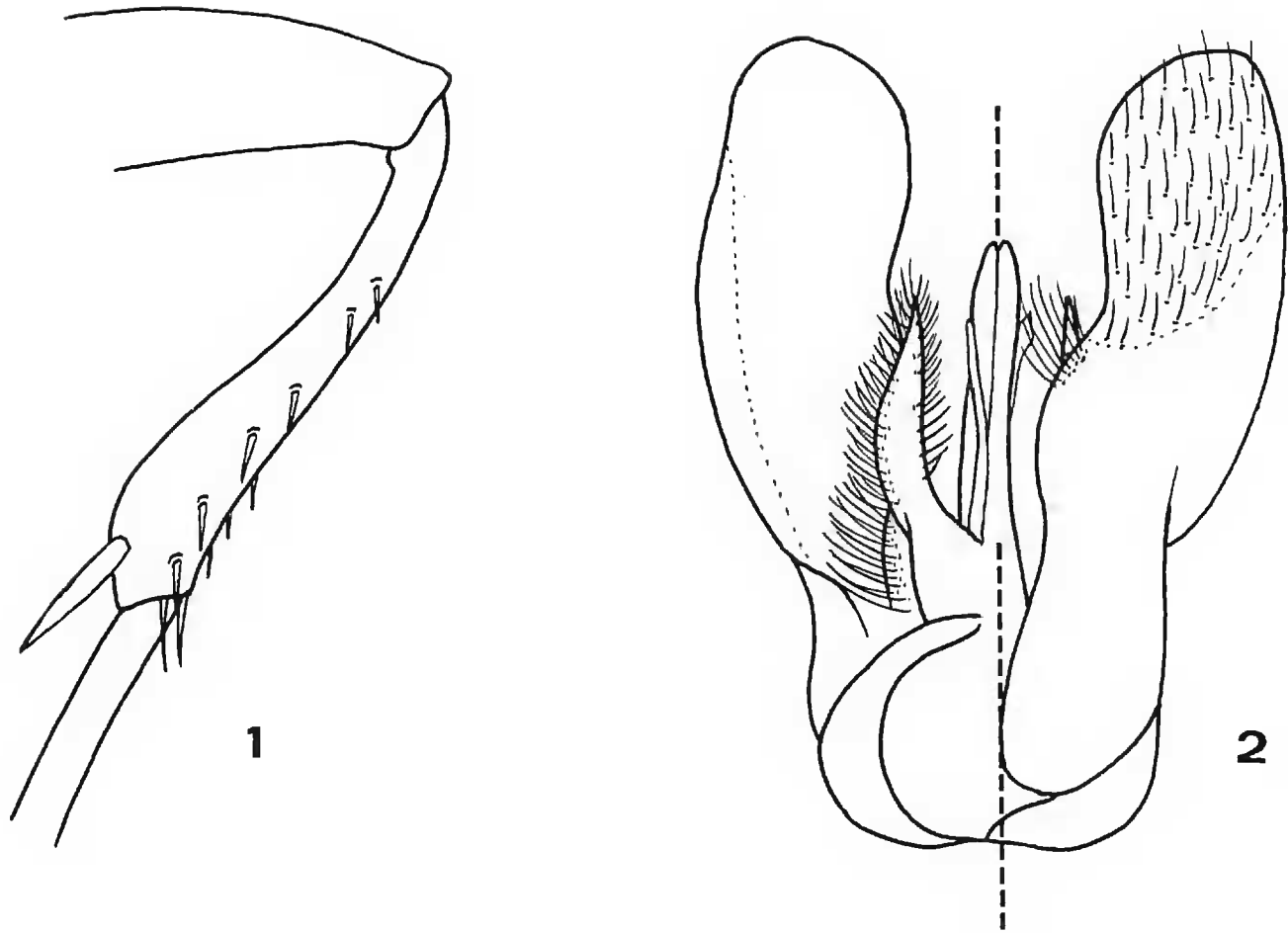
A collection of aculeate Hymenoptera obtained by William H. Clark and his associates during ecological studies in central Lower California was received for identification. Among this material was an undescribed species of *Bembix* Fabricius which is here named after Richard M. Bohart, in recognition of his contribution to the taxonomy of Bembicini.

***Bembix boharti* Griswold, NEW SPECIES**

(Figs. 1, 2)

Male.—Length, 22 mm; forewing length, 14 mm. Black with extensive yellow markings, except white postocularly, laterally on scutellum, medially on terga I–V; pale markings as follows: scape; pedicel ventrally; lower half of frons with linear extension dorsally along eye margin to level of midocellus, linear vertical mark below midocellus; clypeus; labrum; mandible except teeth; posterior margin of eye; pronotum except large quadrate dorsal mark and irregular mark at pronotal angle; anterior half of tegula; anterior half of costal lamella; posterolateral corner of scutum; mark on mesopleuron, vertical on upper half of sclerite then obliquely angled ventrally toward anterior margin; basalar area of mesopleuron; basalar lobe of metapleuron; most of metapleuron; lateral portion of propodeum; mesosternum medial to midcoxa; legs except coxae basally, trochanters dorsally, femora at extreme base and central posterior region; tergum I with transverse mark broadly interrupted medially; tergum II–V with transverse mark narrowly interrupted medially, submedially emarginate anteriorly; tergum VI with transverse mark narrowly interrupted medially; tergum VII apically; sternum I except basal inverted “W”-shaped area; sternum II except linear basomedial line and anterolateral corner; sternum III–V basomedially, anterolaterally; basal third of sternum VI; basal two-thirds of sternum VII; medial mark on dorsal surface of paramere. Wings hyaline; veins reddish except subcosta black basally to junction with basal vein. Body clothed with dense, silvery pubescence.

Midocellus a linear crescent; flagellomeres IV–VII with teeth, those on articles VI, VII spinose; flagellomeres IV–X with tyloids; flagellomeres VIII–X expanded ventrally, broader than preceding segments; flagellomere XI elongate, curved; scape length greater than clypeal height; labrum without median angulation, length more than twice clypeal height; mandible slightly curved apically, inner tooth distinct; forebasitarsus with 7 rake setae; midfemur with small denticles ventrally on apical four-fifths; midtibia with ventral flange on apical half (Fig. 1); length of midtibial spur less than one-half length of midbasitarsus; first intersubmarginal vein of forewing with strong, step-like double bend; tergum VII broadly rounded apically, without lateral angle; spiracular lobe broad, rounded apically, length one-



Figs. 1, 2. *Bembix boharti*. 1, Portion of male midleg showing distally enlarged tibia. 2, Male genital capsule (left side, ventral view; right side, dorsal view).

half that of tergum VII; sternum II with prominent, blunt, median keel; sternum VI with broad, ventrally flattened median process notched apically, ventral surface parallel to surface of sternum; sternum VII with submedian longitudinal carina in addition to apically notched median carina; genitalia as in Fig. 2.

Female.—Length, 19–21 mm; forewing length, 13–14 mm. Markings as in male except: white markings reduced to medial areas of terga I–IV; pale markings of pronotum more extensive; scutum with anterolateral and discal stripes; mesopleural mark expanded posteroventrally to form rough triangle, mesopleuron with additional narrowly isolated mark dorsoposteriorly; metapleuron entirely pale; propodeum with lateral mark expanded to posterior face, additional marks along posterior margin of propodeal triangle; terga II and sometimes III with markings expanded anteriorly forming small enclosed black spots; tergum VI yellow except basally; pale markings of sternum I expanded; sternum II pale except for oval basomedial area; sternum VI pale except for narrow medial line; wing venation darker.

Structures as in male except flagellomeres, midfemur, midtibia, sterna not modified; ratio of maximum length of flagellomere I to maximum length of scape between 1.04 and 1.11; ratio of length of flagellomere I to height of clypeus between 1.22 and 1.34; forebasitarsus with 7 rake setae, length of distal ones more than twice width of basitarsus; pygidium slightly roughened, without lateral angle.

Type material.—Holotype ♂, MEXICO, *Baja California (Norte)*, 9 km NW Rancho Santa Inés, 29°46'N, 114°46'W, 10-VI-79, W. H. Clark. Paratypes: MEXICO: *Baja California (Norte)*: 12 ♂, 7 ♀, same data as holotype; 1 ♂, 2 ♀, same

except 11-VI-79; 1 ♀, same except 14-VI-79; 1 ♂, 2 ♀, same except 17-VI-79; 1 ♀, same except 19-VI-79; 6 ♂, 20 ♀, same except E. R. Tinkham; 1 ♀, same except 11-VI-79, J. Hoch; 1 ♀, same except 12-VI-79; 1 ♂, 1 ♀, 9.6 km (6 mi) NW Rancho Santa Ines, 29°43'N, 114°43'W, 17-VI-79, J. Miles; 1 ♀, 1.6 km (1 mi) NE Santa Catarina Ranch, 29°44'N, 115°09'W, 20-VI-79, W. H. Clark; 1 ♀, 8 km NW Santo Tomas, 31°37'N, 116°27'W, 200 m, 9-VI-79, W. H. & M. H. Clark; 1 ♂, El Marmol, 18-VI-38, Michelbacher & Ross. *Baja California Sur*: 1 ♂, 4 ♀, La Paz and vicinity, 11/14-VI-75, H. E. Evans; 1 ♀, same except H. Evans, W. Rubink, & D. Gwynne; 1 ♂, 1 ♀, Cape San Lucas, 19-III-28, T. Craig; 2 ♀, La Paz, 3-VI-21, E. P. VanDuzee; 1 ♀, same except 4-VI-21; 2 ♀, La Paz, 7.6 m (25'), 12-V-69, S. C. Williams; 2 ♀, 4.8 km (3 mi) W San Miguel de Comondu, 457 m (1500'), 21-IV-69, S. C. Williams. Holotype will be deposited at the California Academy of Sciences, paratypes at the Museum of Natural History, College of Idaho, Caldwell, Idaho, California Academy of Sciences, Colorado State University, University of California at Davis, U.S. National Museum, USDA Bee Biology and Systematics Laboratory, Logan, Utah, and the personal collection of E. R. Tinkham.

Additional material.—MEXICO, *Baja California (Norte)*: 2 ♀, km 76.7 on road to Sierra San Pedro Martir National Park, 21-VII-77, D. Weissman & C. Mullinex; 1 ♀, same except km 76.5, 20-VII-77.

Discussion.—This species belongs to the *amoena* species-group of Evans and Matthews (1968) which contains two other species, *B. amoena* Handlirsch and *B. sayi* Cresson. *B. boharti* is close to *B. sayi*, and given the wide distribution and considerable variation of *B. sayi* it might be questioned whether *B. boharti* is distinct. However, I have studied 56 males and 51 females of *B. sayi* from throughout its range and find there to be distinct and consistent differences between the two species. Further, the range of *B. sayi* extends westward into California only in the northern Mojave Desert, not entering either the Colorado Desert or cismontane southern California. Thus, *B. boharti*, which appears to be restricted to central and southern Lower California, is isolated from *B. sayi* by these intervening regions. The male of *B. boharti* runs to couplet 9 in Evans and Matthews' key. It can be separated from the other two species in this group by the strong, apically expanded ventral keel on the midtibia, the absence of a polished basal welt on flagellomere XI, and the more evenly rounded apicolateral margin of the paramere. It also differs from *B. amoena* in the short midtibial spur (less than half length of midbasitarsus) and the broad spiracular lobe of tergum VII, and from *B. sayi* by the median platform of sternum VI parallel to the surface of the segment and sternum VII with strong lateral carinae. Males of *B. boharti* vary slightly in the extent of the pale markings. Some possess faint white discal marks on the scutum.

The female of *B. boharti* is easily distinguished from *B. amoena* by the short midtibial spur (less than half length of midbasitarsus). It runs to *B. sayi* in the key of Evans and Matthews (1968). The only consistent difference found between female *B. boharti* and *B. sayi* is in the length of flagellomere I relative to the maximum scape length (Fig. 3). The ratio of these lengths is greater in *B. boharti* (flagellomere I length/maximum scape length: $\bar{x} = 1.07 \pm 0.02$, range = 1.04–1.11, $n = 54$) than in *B. sayi* ($\bar{x} = 0.96 \pm 0.03$, range = 0.86–1.00, $n = 51$). Note that the ranges of the ratios do not overlap. A Mann-Whitney U Test comparing the ratios of these two species was significant ($P < 0.0001$). The length of flagello-

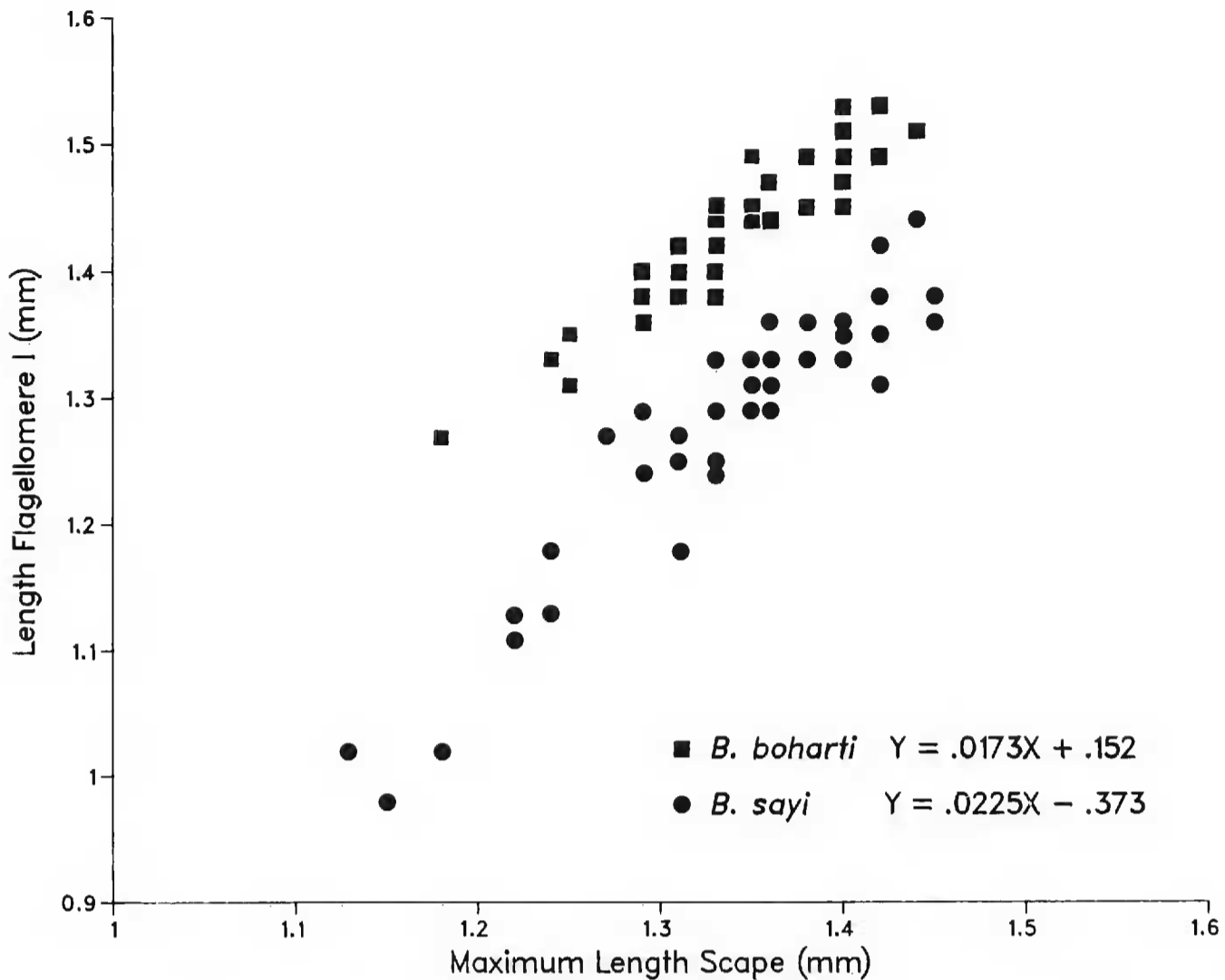


Fig. 3. Plot of length of flagellomere I against maximum scape length for female *B. boharti* and *B. sayi*.

mere I in relation to the height of the clypeus is also usually greater in *B. boharti* (flagellomere I length/median clypeal height: $\bar{x} = 1.27 \pm 0.03$, range = 1.22–1.34, $n = 54$) than in *B. sayi* ($\bar{x} = 1.10 \pm 0.06$, range = 0.97–1.22, $n = 51$). A Mann-Whitney U Test comparing these ratios was also significant ($P < 0.0001$). An additional character that will serve to differentiate most specimens is the absence of a complete longitudinal black stripe on the venter of the abdomen and the presence of a fine medial black line on sternum VI. However, specimens of *B. boharti* from near Sierra San Pedro Martir National Park have the black areas more extensively developed and occasional specimens of both *B. sayi* and *B. amoena* have reduced black areas approaching the condition of *B. boharti*.

Evans (1976) recorded *B. sayi* from Baja California Sur, described aspects of its nesting biology, and commented that it differed from populations at several locations in the United States in its "mound-building behavior." I have studied these specimens and find them to be representatives of *B. boharti*. Thus, the differences in nesting biology noted by Evans may be of species significance. Fox (1923) also recorded *B. sayi* from Lower California. These records also refer to *B. boharti*.

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